



P14 4051 Rapid 2 Thermo

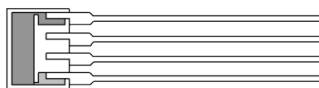
Capacitive Humidity Sensor

Optimal for weather balloons / radiosondes with on-chip heater and temperature sensor

Benefits & Characteristics

- Extraordinary fast response time: 3 x faster than P14 Rapid
- Temperature shock resistant
- Fast recovery time after condensation
- Robust against icing
- Humidity sensor with on-chip heater / temperature sensor
- Outstanding sensitivity
- High humidity stability
- Customer-specific sensor available upon request

Illustration¹⁾



Front side: humidity sensor



Back side: Heater / temperature sensor



Side-view

1) For actual size, see mechanical dimensions

Technical Data

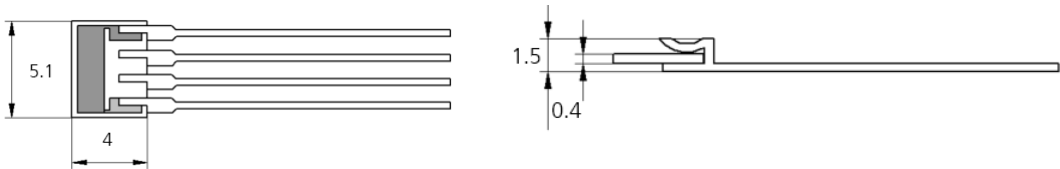
Dimensions (L x W x H / H2 in mm):	4.0 x 5.1 x 0.4 / 1.5
Operating humidity range:	0 % RH to 100 % RH (maximal dew point +85 °C)
Operating temperature range:	-80 °C to +150 °C
Heater / temperature sensor:*	Pt100 (100 Ω at 0 °C)
Heater/temperature sensor accuracy ²⁾ : <small>2) High accuracy temperature sensor on request</small>	IEC60751 ±1%: $\pm(2.59 + 0.05 \times T)$ °C T = absolute value of temperature in °C
Capacitance (C ₃₀):*	650 pF ±150 pF (at 30 % RH and +23 °C)
Sensitivity (at C ₃₀ = 650 pF):	1 pF/% RH (15 % RH to 90 % RH)
Loss factor:	< 0.05 (at 23 °C, at 10 kHz, at 15 % RH to 90 % RH)
Linearity error:	< 1.5 % RH (15 % RH to 90 % RH at +23 °C)
Hysteresis:	< 1.5 % RH
Response time t ₆₃ ³⁾ :	0.3 s ± 0.2s (50 % RH to 0 % RH at +23 °C)
<small>3) The response time is often measured for increasing humidity steps, whereas physics predicts that decreasing humidity leads to generally far longer response times for capacitive humidity sensors. IST AG thus measures response times always for decreasing humidity values, since this is the worst case.</small>	
Measurement frequency range:	1 kHz to 100 kHz (recommended 10 kHz)
Maximal supply voltage:	< 12 V _{pp} AC
Signal form:	alternating signal without DC bias
Connection:*	CuP-SiL wire post-plated with Sn, 10 mm W x H: 0.5 x 0.25 mm with 1.27 mm pitch

* Customer-specific alternatives available

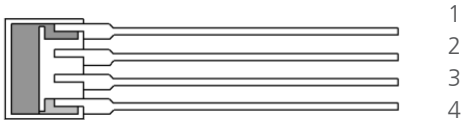


The calibration of the sensor must be done 5 days after soldering at the earliest.

Mechanical Dimensions

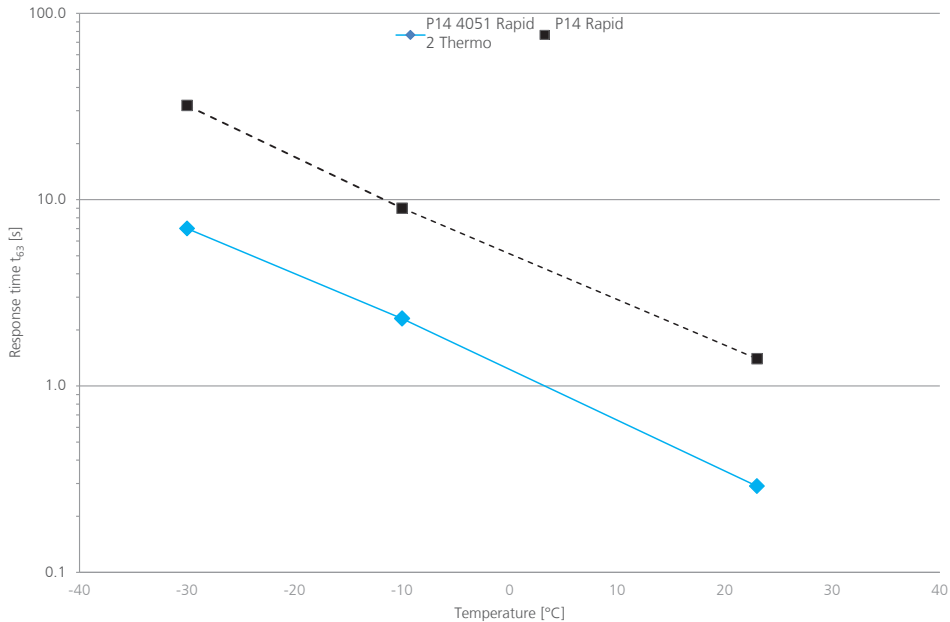


Pin assignment



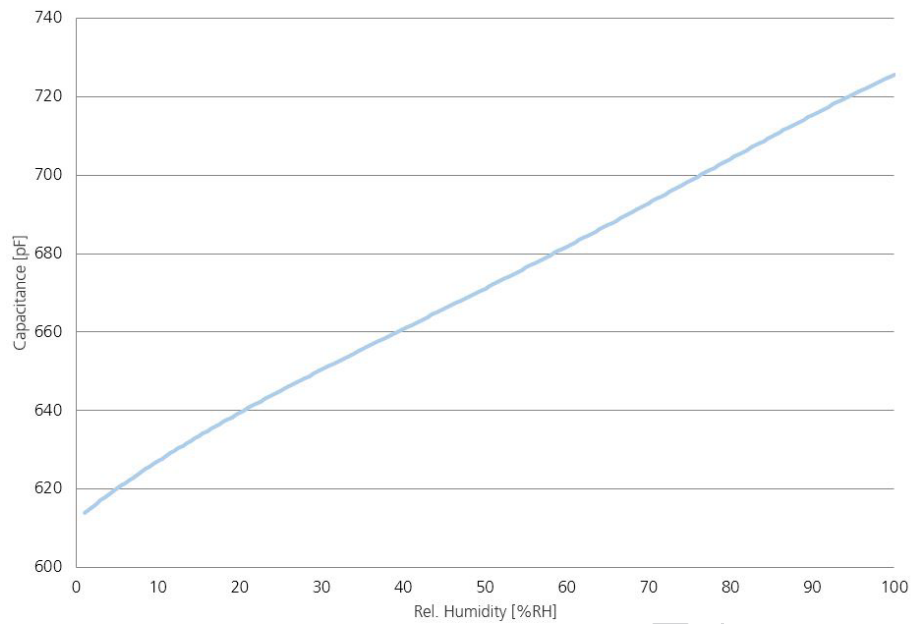
1	2	3	4
humidity sensor	temperature sensor	temperature sensor	humidity sensor

Response time (typical)





Characteristic Curve (typical)



Product Photo



Order Information - CuP-SiL wire post-plated with Sn, 10 mm

Nominal resistance: 100 Ω at 0 °C

Order code	P14 4051 Rapid 2 Thermo
Former order code	150269
	340.00100



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